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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/757,178 | 01/14/2004 | J. Kevin Cammack | NDTCO.012A | 4186 |

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EXAMINER

WALKE, AMANDA C

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1752

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/757,178

Applicant(s)

CAMMACK ET AL.

Examiner

Amanda C. Walke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-24 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-10 and 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hendrickx et al (article from the Journal of Materials Chemistry) in view of Halik et al (US2003/0234396), Hartmann et al (US 2004/0065867), Markin et al (article numbered XP009010921), or Depoorter et al (GB 1,353,905).

Hendrickx et al disclose a photorefractive polymer composition comprising a chromophore which aids in providing photoconductivity (abstract and column 1 of page 2251). The composition also comprises sensitizers and photorefractive polymers. While the reference fails to mention specific dye compounds that are to be added.

Halik et al, Hartmann et al, Markin et al, and Depoorter et al all disclose sensitizing dyes comprising two dioxaborine groups, so they are polydioxaborines. These compounds are taught

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by the references to be employed in polymeric compositions, and meet the structural limitations of the instant claims 1-10 and 12-18.

Given the teachings of the references, it would have been obvious to one of ordinary skill in the art to prepare the material if Hendrickx et al choosing to employ the dyes of Halik et al, Hartmann et al, Markin et al, and Depoorter et al, as the sensitizing dye, with reasonable expectation of achieving a material having excellent photoconductive properties.

4. Claims 1-10 and 12-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marder et al (6,090,332) in view of Halik et al, Hartmann et al, Markin et al, or Depoorter et al.

Marder et al disclose a composition comprising a polymer and a dye having a large which appears to fall within the scope of the instant claim limitations for an NLO chromophore. This dyes have charge transport properties such that the dye facilitates refractive index modulation and a photorefractive effect. The suitable polymers described by the reference include methacrylate units. The composition may further comprise additional known ingredients such as antioxidants, sensitizers, plasticizers, and lubricants (column 17, lines 9-17).

The Halik et al, Hartmann et al, Markin et al, and Depoorter et al references have been discussed above.

Given the teachings of the references, it would have been obvious to one of ordinary skill in the art to prepare the material if Marder et al choosing to employ the dyes of Halik et al, Hartmann et al, Markin et al, and Depoorter et al, as the sensitizing dye, with reasonable expectation of achieving a material having excellent photoconductive properties.

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Allowable Subject Matter

5. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to fairly teach or suggest to one of ordinary skill in the art to prepare a material having a monomer meeting the structural limitations of the instant claim 11.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hunze et al (WO 02/064600) and Cammack et al (2003/0220500) are cited for their teachings of similar materials.

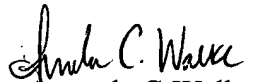
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C. Walke whose telephone number is 571-272-1337.

The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Amanda C Walke
Examiner
Art Unit 1752

ACW
May 25, 2005